

WHAT IS CLAIMED IS:

1 1. A method for reducing intersymbol interference in a
2 telecommunications system, comprising:
3 specifying an initial shaping filter;
4 determining a level of intersymbol interference for a final shaping filter where
5 said final shaping filter is obtained by further processing said initial shaping filter; and
6 updating final shaping filter coefficients at optimal sampling points iteratively
7 until the intersymbol interference is at or below a desired level.

1 2. A method in accordance with claim 1, wherein said optimal sampling
2 points are at a sampling period.

1 3. A method in accordance with claim 2, wherein said initial shaping filter
2 is obtained by performing a convolution on a given filter, with certain spectral and
3 time domain characteristics, with its matched complex counterpart.

1 4. A method, comprising:
2 specifying a given filter with certain time domain and spectral characteristics,
3 obtaining a matched filter counterpart of said given filter;
4 performing a convolution between said given filter and said matched filter to
5 obtain an initial shaping filter;
6 generating a data sequence;
7 convolving said data sequence with said given filter filter; and
8 deriving an optimized shaping filter responsive to said convolving by
9 adaptively minimizing an error metric at points on said initial shaping filter
10 corresponding to optimal sampling points thus producing a signal with minimal ISI
11 period.

1 5. A method in accordance with claim 4, said error metric comprising a
2 least mean squares error metric.

1 6. A telecommunications device, comprising:
2 a coder for encoding data;
3 an RF modulator; and
4 a shaping filter for shaping said coded data and interposed between said
5 coder and RF modulator, the shaping filter generated by constraining the filter
6 coefficients in their adaptation at the optimal sampling point and not constraining
7 them at the non-sampling points.

1 7. A telecommunications device in accordance with claim 6, said shaping
2 filter derived from a convolution between a filter and its corresponding matched filter.

1 8. A telecommunications device as recited in claim 7, wherein said
2 constraining is iteratively performed until an error metric reaches a steady state
3 minimum level.

1 9. A telecommunications device as recited in claim 8, wherein said
2 constraining is iteratively performed until an error metric reaches a predetermined
3 threshold level.

1 10. A method, comprising:
2 specifying an initial filter;
3 first convolving said initial filter with its complex conjugate to obtain an initial
4 shaping filter;
5 second convolving said initial filter with a data sequence; and
6 deriving, responsive to said first and second convolving, a shaping filter by
7 minimizing an error metric at points on said initial shaping filter corresponding to an
8 upsampling period.

1 11. A method as recited in claim 10, wherein said deriving comprises
2 constraining the filter coefficients in their adaptation at the optimal sampling point
3 and not constraining them at the non-sampling points.